What is Claimed is:

[c1] A method of testing dies on a wafer which are to be operated using light, the method comprising: simulating light operated components off of the wafer; and testing the dies on the wafer with the simulated light operated components.

[c2] A method of testing an electronic device on a wafer, comprising: generating an optical test signal; providing the optical test signal to a photo detector; and supplying an electrical output of the photo detector to the electronic device on the wafer.

[c3] The method of claim 2, wherein the optical test signal is provided to the photo detector via a variable optical attenuator.

[c4] The method of claim 2, wherein the optical test signal is generated in accordance with a signal generated by a test controller.

[c5] A method of testing an electronic device on a wafer comprising: driving a light source with an electrical output from the electronic device on the wafer; supplying an optical output of the light source to a photo detector; and examining an electrical signal output from the photo detector.

[c6] The method of claim 5, wherein the optical output of the light source is supplied to the photo detector via a variable optical attenuator.

[c7] A method of testing an electronic device on a wafer, comprising: generating an optical test signal; providing the optical test signal to a first photo detector; supplying an electrical output of the first photo detector to the electronic device on the wafer; driving a light source with an electrical output from the electronic device on the wafer; supplying an optical output of the light source to a second photo detector; and examining an electrical signal output from the second photo detector.

[c8] The method of claim 7, wherein the optical test signal is provided to the first photo detector via a first variable optical attenuator.

[c9] The method of claim 8, wherein the optical output of the light source is supplied to the second photo detector via a second variable optical attenuator.

[c10] The method of claim 7, wherein the optical test signal is generated in accordance with a

signal generated by a test controller.

[c11] The method of claim 10, wherein the generating step includes outputting a constant amplitude optical signal from a laser and modulating the constant amplitude optical signal in accordance with the signal generated by the test controller.

[c12] Apparatus adapted to test an electronic device on a wafer, comprising: a light source adapted to generate an optical test signal in accordance with a test control signal; a photo detector coupled to the light source and adapted to receive the optical test signal and convert the optical test signal into an electrical test signal; and probes connected to the photo detector and adapted to selectively couple the electrical test signal to the electronic device on the wafer.

[c13] The apparatus of claim 12, further comprising a variable optical attenuator coupling the light source to the photo detector.

[c14] The apparatus of claim 12, further comprising a monitoring circuit coupled to the light source and adapted to monitor at least one parameter of the optical test signal.

[c15] Apparatus adapted to test an electronic device on a wafer comprising: a probe adapted to receive an electrical driving signal output from the electronic device on the wafer; a light source coupled to the probe and adapted to receive the electrical driving signal and to be driven to output an optical signal; a photo detector coupled to the light source and adapted to receive the optical signal and convert the optical signal to an electrical detection signal; and a monitoring circuit coupled to the photo detector and adapted to receive and monitor the electrical detection signal.

[c16] The apparatus of claim 15, further comprising a variable optical attenuator coupling the light source to the photo detector.

[c17] The apparatus of claim 15, further comprising: a driving circuit; and a switch adapted to selectively couple the driving circuit to the light source.

[c18] Apparatus adapted to test an electrical device on a wafer, comprising: a first light source adapted to generate an optical test signal in accordance with a test control signal; a first variable optical attenuator coupled to the first light source and adapted to receive and attenuate the optical test signal to produce an attenuated optical test signal; a first photo

detector coupled to the first variable optical attenuator and adapted to receive the attenuated optical test signal and convert the attenuated optical test signal into an electrical test signal; first probes connected to the first photo detector and adapted to selectively couple the electrical test signal to the electronic device on the wafer; a second light source; a second probe adapted to receive an electrical output from the electronic device on the wafer and selectively couple the electrical output from the electronic device on the wafer to drive the second light source to output an optical output signal; a second variable optical attenuator coupled to the second light source and adapted to receive and attenuate the optical output signal to produce an attenuated optical output signal; a second photo detector coupled to the second optical attenuator and adapted to receive the attenuated optical output signal and convert the attenuated optical output signal into an electrical detection signal; and a first monitoring circuit coupled to the second photo detector and adapted to receive and monitor the electrical detection signal.

[c19] The apparatus of claim 18 further comprising: a three-terminal optical coupler having an input terminal coupled to the first light source, a first output terminal coupled to the first variable optical attenuator, and a second output terminal; a third photo detector, coupled to the second output terminal of the three-terminal optical coupler, the third photo detector adapted to receive a portion of the optical test signal generated by the first light source and to convert said portion of the optical test signal into an electrical monitoring signal; and a second monitoring circuit coupled to the third photo detector and adapted to receive and monitor the electrical monitoring signal.

[c20] The apparatus of claim 19, further comprising: a light source driver; a switch connected to the second light source and adapted to couple the second light source to a selected one of the second probe and the light source driver.

[c21] The apparatus of claim 20, further comprising a wafer test probe card on which the first photo detector, the switch, the light source driver and the second light source are mounted.

[c22] The apparatus of claim 21, wherein the first light source, the first variable optical attenuator, the second variable optical attenuator, the second photo detector, the first monitoring circuit, the three-terminal optical coupler, the third photo detector and the second monitoring circuit are not mounted on the wafer test probe card.

[c23] The apparatus of claim 18, wherein the first light source includes a laser, and further comprising a driving circuit adapted to drive the laser.

[c24] The apparatus of claim 23, wherein the driving circuit receives the test control signal and drives the laser in accordance with the test control signal.

[c25] The apparatus of claim 24, wherein the driving circuit includes: an operational amplifier that receives the test control signal at a non-inverting input of the operational amplifier; a power transistor having its base connected to an output of the operational amplifier; and a resistor connected between ground and an inverting input of the operational amplifier; wherein the laser is a laser diode connected between an emitter of the power transistor and the inverting input of the operational amplifier.

[c26] The apparatus of claim 23, wherein the driving circuit drives the laser to output a constant amplitude optical signal, and further comprising an optical modulator adapted to receive the test control signal and modulate the constant amplitude optical signal in accordance with the received test control signal.

[c27] The apparatus of claim 18, wherein the electrical detection signal is a current signal and the first monitoring circuit includes: a transimpedance amplifier adapted to convert the current signal to a voltage signal; and a time measurement system adapted to measure parameters of the voltage signal.

[c28] The apparatus of claim 18, wherein the electrical detection signal is a current signal and the first monitoring circuit includes: a transimpedance amplifier adapted to convert the current signal to a voltage signal; an analog-to-digital (A/D) converter adapted to convert the voltage signal to digital data; a first-in-first-out (FIFO) memory adapted to store the digital data; and a timing controller adapted to provide timing signals to the A/D converter and the FIFO memory.

[c29] The apparatus of claim 18, wherein the first photo detector is selected from the group consisting of a PIN diode and an avalanche photo diode (APD).

[c30] The apparatus of claim 18, wherein the second photo detector is selected from the group consisting of a high speed photo diode, a PIN diode and an APD.

[c31] Apparatus for testing an electrical device on a wafer, comprising: a first light source for

generating an optical test signal in accordance with a test control signal; a first variable optical attenuator coupled to the first light source for receiving and attenuating the optical test signal to produce an attenuated optical test signal; a first photo detector coupled to the first variable optical attenuator for receiving the attenuated optical test signal and converting the attenuated optical test signal into an electrical test signal; first probes connected to the first photo detector for selectively coupling the electrical test signal to the electronic device on the wafer; a second light source; a second probe for receiving an electrical output from the electronic device on the wafer and selectively coupling the electrical output from the electronic device on the wafer to drive the second light source to output an optical output signal; a second variable optical attenuator coupled to the second light source for receiving and attenuating the optical output signal to produce an attenuated optical output signal; a second photo detector coupled to the second optical attenuator for receiving the attenuated optical output signal and converting the attenuated optical output signal into an electrical detection signal; and a first monitoring circuit coupled to the second photo detector for receiving and monitoring the electrical detection signal.